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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/836,857	04/17/2001	Seiichi Iwamatsu	12179-P098US	5893
29444	7590	01/16/2004	EXAMINER	
KELLY KORDZIK WINSTEAD SECHREST & MINICK P.C. 5400 RENAISSANCE TOWER DALLAS, TX 75270			VANORE, DAVID A	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/836,857

**Applicant(s)**

IWAMATSU, SEIICHI

**Examiner**

David A Vanore

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

In view of the Appeal Brief filed on December 8, 2003, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Applicant's arguments filed December 8, 2003 have been fully considered but they are not persuasive.

Applicant's arguments regarding claims 1-3, 6, and 9 are not found to be persuasive.

Applicant argues with respect to claim 1 that some of the emitters of Baylor et al. must be turned off during exposure. Baylor et al. teaches a Col. 7 Lines 53-68 that turn-on and turn-off of the entire matrix is accomplished by switching mean 440 and that individual emitter control can be processed by connection 530 to each individual emitter.

Applicant argues with respect to claim 6 that the conductive grid (440) of Baylor et al. not deposited on the substrate. Looking to Fig. 5, grid 440 is clearly deposited on

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the hatched layer which is deposited on substrate 510. Therefore, grids 441-444, which comprise grid 440, are deposited on the substrate.

Applicant's arguments with respect to claims 4, 5, 7, and 8 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, and 9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Baylor et al.

Baylor et al. teaches an electron beam lithography apparatus comprising a first substrate (Fig. 5 Item 510) having electron field emitters (431,432,433,434) positioned there above with an electric grid circuit (440) to control the emission of electrons from the desired emitters. Baylor et al. further teaches a second substrate (350) having a resist coating thereon which electron beams are impinged on to form a desired pattern as recited in claim 1. See Baylor et al. (Col. 3 Line 44 – Col. 4 Line 25.)

Wherein the electron emission material is deposited on the first substrate in a predefined pattern (Fig. 5 and Col. 5 Lines 55-68) and where the emission material emits electrons on a continuous basis when activated (Col. 7 Lines 54-68).

Fig. 5 also clearly shows that there is no emission material in between emitter array elements (431, 432, 433, etc.).

Regarding claims 2 and 3, Baylor et al. teaches the use of magnetic and electrostatic field lenses (463, 467, 470) between the first and second substrate to focus the electron beams.

Regarding claim 4, Baylor et al. further teaches a conductive layer between the first substrate and the field emitters. The conductive layer (520) controls electron emission.

Regarding claims 6 and 9, Baylor et al. teaches a conductive material deposited on the first substrate between field emitters (441, 442, 443, 444), which is positioned such that the emitter is recessed below the surface of the conductive material.

Regarding the amendment to claim 1, the field emission means (431) are active field emitters disposed on the first substrate in a predefined pattern. Baylor et al. does not indicate that these emitters move, therefore they are positioned on a permanent basis. Further, when a current is applied to said emitters, they continuously emit electrons. Looking to Fig. 5, no active material lies outside the pattern, since it necessarily defines the pattern, meaning that there is a space between boundary material 441 and emitters 431. Since no emission material lies between 431 and 441, no electrons are emitted from this space between them, again see the emission lines coming from 431.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baylor et al. in view of Park.

Baylor et al. teaches all limitations as applied above but fails to teach a second substrate positioned a distance from the emitter substrate having a conductive layer implanted therein between a substrate layer and a resist layer.

Park teaches a lithography device in which the target of a lithography beam of electron radiation is a second substrate positioned a distance from a field emission means with a layer of conductive material deposited between the second substrate and a layer of resist (Col. 2 Lines 3-28).

Modifying the device of Baylor et al. with the device of Park would produce a field emitting array electron beam lithography device whose target is a wafer having a conductive layer implanted therein between a substrate layer and a resist layer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to supply a substrate having a conductive layer interposed between a substrate layer and a resist layer because the layering of conductors and resist on a substrate allows the process of semiconductor manufacture to be accomplished where

an electron beam reacts with the resist, selectively exposing the conductive layer during the development process to allow fabrication of a desired circuit on a substrate.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baylor et al.

Baylor et al. teaches all limitations as applied above but fails to teach a conductive material which cover the edges of the field emitter as recited in claim 7 or where the conductive material is coplanar with the emitting surface of the field emitter as recited in claim 8.

Baylor et al. does teach that it is within the level of ordinary skill in the art to provide a conductive layer such as in claim 6 of any shape so long as a suitable emission field is produced (Col. 8 Lines 40-45).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a conductive material which cover the edges of the field emitter as recited in claim 7 or where the conductive material is coplanar with the emitting surface of the field emitter as recited in claim 8 because Baylor et al. teaches that the conductive grid disclosed in the prior art would be fashioned into any desired shape.

### ***Conclusion***

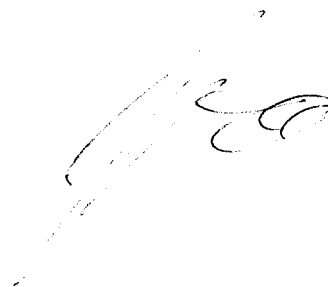
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Vanore whose telephone number is 703-306-0246. The examiner can normally be reached on M-F 7:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on 703-308-4116. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

dav

A handwritten signature in black ink, appearing to be "J. R. Lee", is located in the lower right quadrant of the page.